



Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Matthew A. Beaton
Secretary

Karyn E. Polito
Lieutenant Governor

Martin Suuberg
Commissioner

July 19, 2016

Cohasset Board of Selectmen
41 Highland Avenue
Cohasset, Massachusetts 02025

RE: **COHASSET – BRP/WMA**
Cohasset Water Department
PWS ID # 4065000
Final Renewed Water Management Act Permit
#9P4-4-21-065.01

Dear Selectmen:

Please find attached the following:

- Findings of Fact in Support of the Final Renewed Permit and;
- Final Renewed Water Management Act Permit # 9P4-4-21-065.01 for the Town of Cohasset, Massachusetts.

If you have any questions concerning this letter, please contact Richard Friend at 617-654-6522 or e-mail at richard.friend@state.ma.us.

Sincerely,

Rebecca Weidman
Director, Division of Watershed Management
Bureau of Water Resources

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cc: Lenora Jenkins, Cohasset Water Commission
Carl Hillstrom, Cohasset Water Dept.
Ecc: Michelle Cradock, DFW
Duane LeVangie, DEP
Jen Pederson, MWWA
Michele Drury, DCR
Julia Blatt, Mass Rivers Alliance

Communication For Non-English Speaking Parties - 310 CMR 1.03(5)(a)

Contact Michelle Waters-Ekanem, Diversity Director/Civil Rights: 617-292-5751 TTY#
MassRelay Service 1-800-439-2370.

<http://www.mass.gov/eea/agencies/massdep/service/justice/>

(Version 3.30.15)



1 English:

This document is important and should be translated immediately. If you need this document translated, please contact MassDEP's Diversity Director at the telephone numbers listed below.



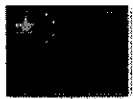
2 Español (Spanish):

Este documento es importante y debe ser traducido inmediatamente. Si necesita este documento traducido, por favor póngase en contacto con el Director de Diversidad MassDEP a los números de teléfono que aparecen más abajo.



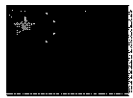
3 Português (Portuguese):

Este documento é importante e deve ser traduzida imediatamente. Se você precisa deste documento traduzido, por favor, entre em contato com Diretor de Diversidade da MassDEP para os números de telefone listados abaixo.



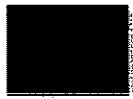
4(a) 中國 (傳統) (Chinese (Traditional)):

本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼與MassDEP的多樣性總監聯繫。



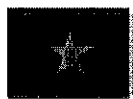
4(b) 中国 (简体中文) (Chinese (Simplified)):

本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼與MassDEP的多样性总监联系。



5 Ayisyen (franse kreyòl) (Haitian) (French Creole):

Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradui imedyatman. Si ou bezwen dokiman sa a tradui, tanpri kontakte Divèsite Direktè MassDEP a nan nimewo telefòn ki nan lis pi ba a.



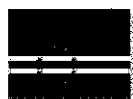
6 Việt (Vietnamese):

Tài liệu này là rất quan trọng và cần được dịch ngay lập tức. Nếu bạn cần dịch tài liệu này, xin vui lòng liên hệ với Giám đốc MassDEP đa dạng tại các số điện thoại được liệt kê dưới đây.



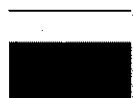
7 ប្រទេសកម្ពុជា (Kmer (Cambodian)):

ឯកសារនេះគឺមានសារៈសំខាន់និងគួរត្រូវបានបកប្រែភ្លាមៗ ប្រសិនបើអ្នកត្រូវបានបកប្រែឯកសារនេះសូមទំនាក់ទំនងភ្នាក់ងារនាយក MassDEP នៅលេខទូរស័ព្ទដែលបានរាយខាងក្រោម។



8 Kriolu Kabuverdianu (Cape Verdean):

Es documento é importante e deve ser traduzido imidiatamente. Se bo precisa des documento traduzido, por favor contacta Director de Diversidade na MassDEP's pa es numero indicode li d'boche.



9 Русский язык (Russian):

Этот документ является важным и должно быть переведено сразу. Если вам нужен этот документ переведенный, пожалуйста, свяжитесь с директором разнообразия MassDEP по адресу телефонных номеров, указанных ниже.

Communication For Non-English Speaking Parties - 310 CMR 1.03(5)(a)

Contact Michelle Waters-Ekanem, Diversity Director/Civil Rights: 617-292-5751 TTY#

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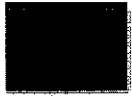
10 العربية (Arabic):

هذه الوثيقة الهامة وينبغي أن تترجم على الفور. إذا كنت بحاجة إلى هذه الوثيقة المترجمة، يرجى الاتصال مدير التنوع في MassDEP على أرقام الهواتف المدرجة أدناه.



11 한국어 (Korean):

이 문서는 중요하고 즉시 번역해야 합니다. 당신이 번역이 문서가 필요하다면 아래의 전화 번호로 MassDEP의 다양성 감독에 문의하시기 바랍니다.



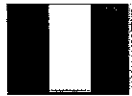
12 հայերեն (Armenian):

Այս փաստաթուղթը շատ կարևոր է եւ պետք է թարգմանել անմիջապես. Եթե Ձեզ անհրաժեշտ է այս փաստաթուղթը թարգմանվել դիմել MassDEP բազմազանությունը տնօրեն է հեռախոսահամարների թվարկված են ստորև.



13 فارسی (Farsi (Persian)):

این سند مهم است و باید فوراً ترجمه شده است. اگر شما نیاز به این سند ترجمه شده، لطفاً با ما تماس تنوع مدیر MassDEP در شماره تلفن های ذکر شده در زیر.



14 Français (French):

Ce document est important et devrait être traduit immédiatement. Si vous avez besoin de ce document traduit, s'il vous plaît communiquer avec le directeur de la diversité MassDEP aux numéros de téléphone indiqués ci-dessous.



15 Deutsch (German):

Dieses Dokument ist wichtig und sollte sofort übersetzt werden. Wenn Sie dieses Dokument übersetzt benötigen, wenden Sie sich bitte Diversity Director MassDEP die in den unten aufgeführten Telefonnummern.



16 Ελληνική (Greek):

Το έγγραφο αυτό είναι σημαντικό και θα πρέπει να μεταφραστούν αμέσως. Αν χρειάζεστε αυτό το έγγραφο μεταφράζεται, παρακαλούμε επικοινωνήστε Diversity Director MassDEP κατά τους αριθμούς τηλεφώνου που αναγράφεται πιο κάτω.



17 Italiano (Italian):

Questo documento è importante e dovrebbe essere tradotto immediatamente. Se avete bisogno di questo documento tradotto, si prega di contattare la diversità Direttore di MassDEP ai numeri di telefono elencati di seguito.



18 Język Polski (Polish):

Dokument ten jest ważny i powinien być natychmiast przetłumaczone. Jeśli potrzebujesz tego dokumentu tłumaczone, prosimy o kontakt z Dyrektorem MassDEP w różnorodności na numery telefonów wymienionych poniżej.



19 हिन्दी (Hindi):

यह दस्तावेज़ महत्वपूर्ण है और तुरंत अनुवाद किया जाना चाहिए. आप अनुवाद इस दस्तावेज़ की जरूरत है, नीचे सूचीबद्ध फोन नंबरों पर MassDEP की विविधता निदेशक से संपर्क करें.



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Findings of Fact in Support of Final Water Management Permit #9P4421065.01 Town of Cohasset

The Department of Environmental Protection (the Department) makes the following Findings of Fact in support of the attached final Water Management Permit #9P4421065.01, and includes herewith its reasons for issuing the Permit and for conditions of approval imposed, as required by M.G.L. c. 21G, § 11. The issuance of this permit is in response to a water withdrawal permit renewal application by the Town of Cohasset Water Department, (Cohasset) for the purpose of public water supply.

The Department adopted revised Water Management Regulations at 310 CMR 36.00 on November 7, 2014, (described in greater detail below). Since that time, the Department has been working closely with each Water Management Act (WMA) permittee to fully consider all aspects of their individual situations and ensure thoughtful and implementable permits.

The Department met with Cohasset's representatives on several occasions regarding the conditions in this permit and, in particular, the inclusion of seasonal limits on nonessential outdoor water use, a permit condition new to Cohasset, and the lowering of Cohasset's performance standards from 80 gal/day/capita RGPCD and 15% UAW to 65 gal/day/capita and 10% UAW. The Department has included Cohasset's ongoing Aaron River Reservoir Dam and Bound Brook Control Structure Flow Releases and Operational Plan as a condition of this permit. This plan is an example of forward-looking environmental stewardship undertaken in conjunction with providing reliable water supply for public health and safety and ensuring water supplies for future economic growth.

The Permit Extensions

WMA permits issued during the first 20-year permitting cycle for the South Coastal Basin expired on August 31, 2010. All permittees seeking to renew their Water Management permit were required to file a renewal application on or before May 31, 2010. Cohasset filed a timely renewal application and received a one-year Interim Permit, to August 31, 2011, to continue operations while the permit renewal review was ongoing. The Department published notice of the permit renewal application in the Environmental Monitor on June 23, 2010. No comments were received.

Subsequently, the expiration dates for all Water Management permits were extended for four years by Chapter 240 of the Acts of 2010 as amended by Chapter 238 of the Acts of 2012, collectively known as the Permit Extension Act. In addition, in a letter of September 25, 2015, the Department informed Cohasset that the Department would need additional time before making a determination on the application in order to ensure that all permit renewal applicants in the South Coastal Basin fully understood the new Water Management

Regulations (discussed below), and to give proper consideration to all permit renewal applications within the basin. Pursuant to M.G.L. c. 30A, § 13, and 310 CMR 36.18(7), Cohasset's permit continues in force and effect until the Department issues a final decision on the permit renewal application.

The expiration date for all permits going forward in the South Coastal Basin will be August 31, 2030, in order to restore the staggered permitting schedule set forth in the regulations.

The Water Management Act (M.G.L. c. 21G)

The Water Management Act (Act) requires the Department to issue permits that balance a variety of factors including without limitation:

- Impact of the withdrawal on other water sources;
- Water available within the safe yield of the water source;
- Reasonable protection of existing water uses, land values, investments and enterprises;
- Proposed use of the water and other existing or projected uses of water from the water source;
- Municipal and Massachusetts Water Resources Commission (WRC) water resource management plans;
- Reasonable conservation consistent with efficient water use;
- Reasonable protection of public drinking water supplies, water quality, wastewater treatment capacity, waste assimilation capacity, groundwater recharge areas, navigation, hydropower resources, water-based recreation, wetland habitat, fish and wildlife, agriculture, flood plains; and
- Reasonable economic development and job creation.

Water Management Regulation Revisions

In 2010 the Executive Office of Energy and Environmental Affairs (EEA) convened the Sustainable Water Management Initiative (SWMI) for the purpose of incorporating the best available science into the management of the Commonwealth's water resources. SWMI was a multi-year process that included a wide range of stakeholders and support from the Departments of Environmental Protection, Fish and Game, and Conservation and Recreation. In November 2012 the *Massachusetts Sustainable Water Management Initiative Framework Summary* (<http://www.mass.gov/eea/docs/eea/water/swmi-framework-nov-2012.pdf>) was released.

On November 7, 2014, the Department adopted revised Water Management Regulations at 310 CMR 36.00 that incorporate elements of the SWMI framework and the Water Conservation Standards adopted by the Massachusetts WRC. The regulations reflect a carefully developed balance to protect the health of Massachusetts' water bodies while meeting the needs of businesses and communities for water.

Without limitation, the Department has incorporated the following into Water Management permitting:

- Safe yield determinations for the major river basins based on a new methodology developed through SWMI (see the Safe Yield in the South Coastal Basin section of this document);
- Water needs forecasts for public water suppliers developed by the Department of Conservation and Recreation, Office of Water Resources (DCR), using a methodology reviewed and approved by the Massachusetts WRC;
- Water supply protection measures for public water supplies including Zone II delineations for groundwater sources, and wellhead and surface water protection measures as required by Massachusetts Drinking Water Regulations (310 CMR 22.00);
- Water conservation and performance standards reviewed and approved by the WRC in July 2006 and revised in June 2012 (<http://www.mass.gov/eea/docs/eea/wrc/water-conservation-standards-rev-june-2012.pdf>), including without limitation:
 - performance standard of 65 residential gallons per capita day or less;
 - performance standard of 10% or less unaccounted-for-water;

- seasonal limits on nonessential outdoor water use;
- a water conservation program that includes leak detection and repair, full metering of the system and proper maintenance of the meters, periodic review of pricing, and education and outreach to residents and industrial and commercial water users; and
- Environmental protections developed through SWMI, including without limitation:
 - protection for coldwater fish resources;
 - minimization of withdrawal impacts in areas stressed by groundwater use;
 - mitigation of the impacts of increasing withdrawals.

Safe Yield in the South Coastal Basin

This permit is being issued under the safe yield methodology adopted by the Department on November 7, 2014, and described in the regulations at 310 CMR 36.13. As of the date of issuance of this permit, the safe yield for the South Coastal Basin is 70.1 million gallons per day (MGD), and total registered and permitted withdrawals are 47.4 MGD, leaving 22.70 MGD potentially available. The maximum withdrawals that will be authorized in this permit, and all other permits currently under review by the Department within the South Coastal Basin, will be within the safe yield and may be further conditioned as outlined in the regulations.

Findings of Fact for Special Permit Conditions in Cohasset’s Water Management Act Permit

The following Findings of Fact for the special conditions included in the permit generally describe the rationale and background for each special condition in the permit. This summary of permit special conditions is not intended to, and should not be construed as, modifying any of the permit special conditions. In the event of any ambiguity between this summary and the actual permit conditions, the permit language shall control.

Special Condition 1, Maximum Authorized Annual Average Withdrawal, reflects the total (registered plus permitted) annual average authorized withdrawal volume Cohasset is currently permitted for and is not based entirely on the water needs forecast prepared by DCR. The Water Needs Forecast projects Cohasset’s demand rising to 1.064 MGD by 2030, which is 0.114 MGD more than the 0.95 MGD authorized in Cohasset’s registration and expiring permit. If water needs exceed the maximum authorized in this permit, Cohasset may apply for additional volume at any time by submitting a new Water Management Permit application BRPWM03.

DCR Water Needs Forecasts for Cohasset (MGD)					
Assuming 65 RGPCD and 10% unaccounted-for water					
		2016-2020	2021-2025	2026-2030	2026-2030 + 5% buffer for town
DCR projection for Cohasset system		0.67	0.67	0.66	0.693
Sales to Linden Ponds via Aquarion	+	0.306	0.306	0.306	0.306
Potential takeover of North Cohasset	+		0.065	0.065	0.065
DCR Projection + Linden Pond sales + North Cohasset takeover	=	0.976	1.041	1.031	1.064

Cohasset is under contractual obligation to supply up to 0.306 MGD of water to the Linden Ponds retirement community in Hingham, via the Aquarion Water Company of Hingham. The Massachusetts Water Resources Commission issued an Interbasin Transfer Act (ITA) approval to Cohasset for the transfer of 0.306 MGD to Linden Ponds via Aquarion. In 2014 Cohasset reported selling 37,885,701 gallons to Aquarion, or approximately 0.104 MGD.

There is a potential for Cohasset to take over a portion of the Aquarion/Hingham distribution system located in North Cohasset. The demand of this section of Aquarion's system in Cohasset is approximately 0.065 MGD (65,000 gallons per day).

Special Condition 2, Maximum Authorized Daily Withdrawal Rates reflect the MassDEP-approved Zone II maximum daily pumping rate for Cohasset's permitted well based on prolonged pumping tests and the treatment plant capacity for the surface water source. Withdrawals in excess of these maximum daily rates require approval from the Department.

Special Condition 3, Zone II Delineation requirements have been met and no further delineations are required as a condition of this permit.

Special Condition 4, Wellhead and Surface Water Protection requirements have been met and are up to date as of the issuance of this permit.

Special Condition 5, Firm Yield of Cohasset's Surface Water Sources. Tutela Engineering Associates, Inc. submitted the "Draft Firm Yield Evaluation, Cohasset, MA Water System" dated June 2, 2003 that summarized the results of modeling several reservoir configurations and release options utilizing DEP's "Firm Yield Estimator Version 1.0".

In addition, Tutela provided further clarification in a July 29, 2004 "Response to DEP and WRC Comments, Exhibit B." The combined Firm Yield of 4.06 million gallons per day represents the modeling of Lily Pond and Aaron River Reservoir in series with the required releases to Bound Brook outlined in Special Condition 6.

Special Condition 6, Seasonal Flow Releases and Drought Management Plan. On November 4, 2004, the Water Resources Commission unanimously determined that the proposed purchase of water by Linden Ponds at Hingham from the Cohasset water system, through an interconnection between Cohasset and the Aquarion Water Company, Hingham, is insignificant under the Interbasin Transfer Act. This determination was made based on establishing a protocol for maintaining minimum seasonal releases through fish ladders at Aaron River Reservoir and Bound Brook Control Structure. To satisfy instream flow concerns and anadromous fish passage needs, Cohasset developed the "Aaron River Reservoir Dam and Bound Brook Control Structure Flow Releases and Operational Plan" (the "Plan"), dated March 2004. The required releases included in Table D on page 11 of the Plan are included here in Table 4 in Special Condition 6. The Plan outlines the basis for measuring streamflow (Chapter 4.0) and the operation plan (Chapter 5.0) as amended in the Response to DEP and WRC Comments dated July 29, 2004.

The Town now has an automated system that measures stream flow and adjusts the weir gates to provide the target releases. To verify that the automated system is functioning properly, manual staff gage measurements are conducted weekly in the summer and winter and at least twice a week during fish migration season. Annual calibration of the streamflow releases are made with manual stream flow measurements during low-flow events (between 2 and 10 cfs) at least once per year downstream of both Aaron River Reservoir and the Bound Brook Control Structure.

In December 2013 Cohasset submitted a Water Management Act permit amendment application requesting a reduction in stream flow reporting from quarterly (monthly during the summer) to annual reporting. The amendment application also requested the elimination of five manual stream gauge stations (Peppermint Brook, Brass Kettle Brook, Herring Brook, Bound Brook and Aaron River at Doane Street). In consultation with DCR staff, the Department has approved these requested changes, as reflected in Special Condition 6.

Cohasset developed a “Drought Management Plan”, dated March 2004, to maintain the target releases while providing public drinking water to its customers. Table 2-Drought Phase Levels of the Drought Management Plan as accepted by the Water Resources Commission on November 4, 2004, identifies the Drought Phase, Precipitation, Streamflow, Reservoir, and resulting Drought Phase Action to be implemented in an effort to minimize outdoor water use and reduce non-essential water use when releases are not achieved (Appendix C).

Special Condition 7, Performance Standard for Residential Gallons Per Capita Day Water for all PWS permittees is 65 gallons. Permittees that cannot comply within the timeframe in the permit must meet Functional Equivalence requirements outlined in Appendix A. Cohasset’s 2015 RGPCD was 68 gal/capita/day.

Special Condition 8, Performance Standard for Unaccounted for Water for all PWS permittees is 10%. Permittees that cannot comply within the timeframe in the permit must meet Functional Equivalence requirements based on the AWWA/IWA Water Audits and Loss Control Programs, Manual of Water Supply Practices M36, as outlined in Appendix B. Cohasset’s recent DEP-reviewed UAW values were:

2013	2014	2015
16%	13%	12%

Special Condition 9, Seasonal Limits on Nonessential Outdoor Water Use Since 2005 Cohasset has been required to implement outdoor water use restrictions according to the March 2004 “Drought Management Plan” as described in Special Condition 6. The Department issued an Order to Complete dated March 11, 2015 requesting further information on Cohasset’s permit renewal request, including more details on Cohasset’s Drought Management Plan.

After reviewing the additional information and further discussion with Cohasset, the renewed permit stipulates that Cohasset may implement restrictions according to their Drought Management Plan during periods when Minimum Flow Targets included in Special Condition #6 are maintained. From May 1 to September 30 each year if Minimum Flow Targets are not maintained Cohasset shall at a minimum implement the outdoor water use restrictions as required in Special Condition 9.

Special Condition 10, Water Conservation Requirements, incorporates the Water Conservation Standards for the Commonwealth of Massachusetts reviewed and approved by the WRC in July 2006 and revised in June 2012. (<http://www.mass.gov/eea/docs/eea/wrc/water-conservation-standards-rev-june-2012.pdf>). Cohasset has committed to retrofitting three public buildings with water-saving devices by August 31, 2016: the Osgood Elementary School, the Public Safety Building, 62 Elm Street, and the Town Hall, 41 Highland Ave.

Special Condition 11, Mitigation of Impacts for Withdrawals that Exceed Baseline Withdrawals, requires mitigation of the impacts of withdrawals above the permittee’s baseline, which is based on withdrawals made during 2003-2005. Mitigation of the impacts of increasing withdrawals can be through:

- Direct mitigation that will result in enhanced streamflows through
 - Wastewater returns to local groundwater,
 - Surface water releases,
 - Stormwater recharge, or
 - Infiltration and inflow removal from sewer systems.
- Indirect mitigation activities that will result in streamflow and habitat improvements.

Special Condition 11 outlines Cohasset’s mitigation requirements.

- Cohasset’s baseline withdrawal rate is 0.79 mgd, based on the 2003-2005 actual use plus 5%. This renewed permit authorizes Cohasset to withdraw up to 0.95 mgd, the existing authorized rate, and therefore the mitigation amount is 0.16 MGD, the existing authorized rate minus baseline. Cohasset must apply for a new permit if annual withdrawals exceed 0.95 MGD.
- Cohasset’s “Aaron River Reservoir Dam and Bound Brook Control Structure Flow Releases and Operational Plan” specifies minimum year-round releases from the Bound Brook Control Structure of 2.2 cfs (1.42 mgd), significantly in excess of the 0.16 MGD required mitigation. Cohasset will have a mitigation credit of 1.42 MGD for surface water releases if the plan continues to be implemented.
- Should any of the assumptions or activities outlined in the summary below prove to be inaccurate or change during the life of the permit, the mitigation requirements will need to be reassessed.

Cohasset Permit Renewal and Forecasted Withdrawal Rates (MGD)

Permit Period	Baseline	Permit Renewal Maximum		Forecasted Rate Assuming 65 RGPCD and 10% UAW
		Existing Authorized Rate	Existing Rate minus Baseline = Mitigation Amount	
2015-2020	0.79	0.95	0.16	0.98
2020-2025	0.79	0.95	0.16	1.04
2025-2030	0.79	0.95	0.16	1.06

Special Condition 12, Requirement to Report Raw and Finished Water Volumes is to assure that the information necessary to evaluate compliance with other permit conditions is accurately reported.

Minimization

Permittees with groundwater sources in subbasins having August net groundwater depletion (August NGD) of 25% or greater are required to develop a plan to minimize the impacts of their withdrawals. Cohasset’s only groundwater source, 3065000-02G, is located in subbasin 22078, a coastal subbasin with no value for August net groundwater depleted. Therefore, Cohasset is not required to prepare a Minimization Plan.

Coldwater Fish Resource Protection was incorporated into the Water Management Regulations in November 2014. Coldwater Fish Resource Protection is not a condition of this permit because Cohasset’s withdrawals do not impact any waters that MA Division of Fisheries and Wildlife has identified as supporting coldwater fish.

General Permit Conditions – contains general requirements applicable to all WMA permittees.

In the event of any conflict or ambiguity between the preceding Findings and the permit, the permit language shall control.



Department of Environmental Protection

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FINAL WATER WITHDRAWAL PERMIT MGL c 21G

This renewal of Permit #9P4421065.01 is approved pursuant to the Massachusetts Water Management Act (WMA) for the sole purpose of authorizing the withdrawal of a volume of water as stated below and subject to the following special and general conditions. This permit conveys no right in or to any property.

PERMIT NUMBER: 9P4-4-21-065.01 **BASIN:** South Coastal

PERMITTEE: Town of Cohasset
41 Highland Avenue
Cohasset, MA 02025

EFFECTIVE DATE: July 19, 2016

EXPIRATION DATE: August 31, 2030

USE: Public Water Supply

DAYS OF OPERATION: 365

TYPE AND NUMBER OF WITHDRAWAL POINTS: Groundwater: 1 Surface Water: 1

AUTHORIZED WITHDRAWAL POINTS

Table 1: Withdrawal Point Identification

Source Name	PWS Source ID
Ellms Meadow Wellfield	4065000-02G
Lily Pond, including Aaron River Reservoir	4065000-02S

SPECIAL CONDITIONS

1. Maximum Authorized Annual Average Withdrawal

This permit authorizes the Town of Cohasset to withdraw water from the South Coastal Basin at the rate described in Table 2 below. The volume reflected by this rate is in addition to the 0.65 MGD previously authorized to Cohasset under WMA Registration #421065.01. The permitted rate is expressed both as an average daily withdrawal rate (million gallons per day or MGD), and as a total annual withdrawal (million gallons per year or MGY) for each five-year period of the permit term.

Table 2: Authorized Raw Water Withdrawal Rates

Permit Period	Permit		Registration + Permit	
	Daily Average (MGD)	Total Annual (MGY)	Daily Average (MGD)	Total Annual (MGY)
7/19/2016 to 8/31/2020	0.30	109.5	0.65 + 0.30 = 0.95	346.75
9/1/2020 to 8/31/2025	0.30	109.5	0.65 + 0.30 = 0.95	346.75
9/1/2025 to 8/31/2030	0.30	109.5	0.65 + 0.30 = 0.95	346.75

2. Maximum Authorized Daily Withdrawal Rates

Withdrawals from individual sources are not to exceed the approved maximum daily rates listed below without specific advance written approval from the Department.

Table 3: Individual Source Maximum Daily Withdrawal Rates

Source Name	PWS Source ID	Approved Maximum Daily Rate (MGD)
Ellms Meadow Wellfield	4065000-02G	0.17
Lily Pond*	4065000-02S	3.0

* Maximum daily withdrawal rate is limited to 3.0 million gallons per day, the Department approved design capacity of the Water Treatment Plant. Water Treatment Plant intake velocity shall not exceed five feet per second.

3. Zone II Wellhead Protection Delineations

Department records show that the Ellms Meadow Wellfield (4065000-02G) has a Zone II delineation approved on September 20, 2001 and accepted for the replacement wells on February 11, 2003. No further Zone II work is required as a condition of this permit.

4. Wellhead and Surface Water Protection

Department records show that Cohasset has implemented municipal controls that comply with Wellhead Protection Regulations at 310 CMR 22.21(2) and has an approved Surface Water Supply Protection Plan and Surface Water Supply Protection bylaw which are in compliance with 310 CMR 22.20C.

5. Firm Yield of Surface Water Supplies

The Department accepts the Firm Yield of 4.06 million gallons per day for Cohasset’s combined surface water sources.

6. Seasonal Flow Releases, Drought Management Plan, Monitoring and Reporting

Cohasset shall maintain releases from its reservoirs to meet minimum flow targets described in Table 4. Minimum flow targets for fish passage apply at both the Bound Brook Control Structure (BBCS) and the Aaron River Reservoir fish ladders during the Spring and Fall seasons. Minimum flow targets during the Summer and Winter seasons only apply to the BBCS. A minimum release of 2.2 cubic feet per second (cfs) is required downstream of the BBCS at all times.

Reservoir releases will be discontinued when the water surface at Aaron River Reservoir and BBCS fall below elevation 60.5 feet and 41.0 feet, respectively; these are the minimum inverts of the fishway baffles. If reservoir releases are discontinued, Cohasset will implement the water conservation actions outlined in “Table B- Drought

Phase Levels” in its March 2004 Drought Management Plan (Appendix C of this permit) and include in its annual reporting any Drought Phase Actions implemented.

Table 4: Fish Passage Flow Releases

Season	Description	Criteria	Minimum Flow Target (cfs)
Spring	Fish Run (April, May or June)	The period (approximately 4 weeks) when ten or more River Herring are observed at the fish ladders.	6 – Daylight Flow and 2.2 – Nighttime Flow
Summer	Summer Low Flow Period	The period following the spring fish run, during which flows are naturally lowest, to maintain suitable conditions for aquatic habitat.	2.2 – Daily Flow in Bound Brook downstream of the BBCS
Fall	Fish Run (Sept., Oct. or Nov.)	The period (approximately 4 weeks) when ten or more River Herring are observed at the fish ladders.	6 – Daylight Flow and 2.2 Nighttime Flow
Winter	Winter Flow Period	The period following the fall fish run to assist in maintaining suitable environmental conditions for aquatic habitat.	2.2 – Daily Flow in Bound Brook downstream of the BBCS

Cohasset shall continue to implement its “Aaron River Reservoir Dam and Bound Brook Control Structure Flow Releases and Operational Plan”, dated March 2004, but may eliminate the following gauge stations, as requested in the Permit Amendment application dated December 23, 2013: Peppermint Brook; Brass Kettle Brook; Herring Brook; Bound Brook and Aaron River at Doane Street.

The automatic streamflow measurement equipment shall be calibrated annually with manual streamflow measurements during low-flow events (between 2 and 10 cfs) at least once per year downstream of both Aaron River Reservoir and the Bound Brook Control Structure. The results of the calibration shall be included in the annual report.

Cohasset may return to annual reporting requirements, as requested its December 23, 2013 Permit Amendment application.

7. Performance Standard for Residential Gallons Per Capita Day Water Use

The Town of Cohasset’s performance standard for residential gallons per capita day (RGPCD) is 65 gallons or less. Cohasset shall be in compliance with this standard by December 31, 2018, or, if Cohasset does not meet the standard, shall be in compliance with the functional equivalence requirements (Appendix A).

8. Performance Standard for Unaccounted for Water

Cohasset’s Performance Standard for Unaccounted for Water (UAW) is 10% or less of overall water withdrawal for 2 of the most recent years 3 throughout the permit period. Cohasset shall be in compliance with this performance standard by December 31, 2019 or, if Cohasset does not meet the standard, shall be in compliance with the functional equivalence requirements (Appendix B).

9. Seasonal Limits on Nonessential Outdoor Water Use

Cohasset must continue to implement the “Drought Phase Actions” included in “Table B –Drought Phase Levels” (Appendix C of this permit) of their March 2004 “Drought Management Plan” and shall be responsible for tracking and reporting any periods when they cannot maintain their releases specified in Table 4 of Special Condition 6. From May 1st through September 30th when Cohasset cannot maintain the releases outlined in Table 4, then they must implement the nonessential outdoor water use restrictions outlined below in Table 5.

Table 5: Seasonal Limits on Nonessential Outdoor Water Use

Cohasset's Seasonal Limits on Outdoor Water Use when minimum flow targets in Table 4 of Special Condition 6 are not met from May 1 through September 30	
<p>Minimum flow targets are not met</p>	<p>Nonessential outdoor water use is allowed: Two (2) days per week before 9 am and after 5 pm.</p> <p>Once the flow targets have not been met, the restrictions shall be implemented for at least seven (7) days and continue until minimum flow targets specified in Special Condition 6 have been met for seven (7) consecutive days.</p>
<p>Minimum flow targets are not met and the Low Flow Streamflow Trigger has occurred</p>	<p>Nonessential outdoor water use is allowed: One (1) day per week before 9 am and after 5 pm when USGS stream gage 01105730 – Indian Head River at Hanover, MA falls below 4.9 cfs for three (3) consecutive days.</p> <p>Once implemented, the restrictions shall remain in place until streamflow at the gage meets or exceeds the trigger streamflow for seven (7) consecutive days.</p>

Instructions for Accessing Streamflow Website Information

Streamflow information is available at the USGS National Water Information System (NWIS): Web Interface. The USGS NWIS default shows Massachusetts streamflows in real time, i.e., the most recent, usually quarterly hourly, reading made at each USGS stream gage.

Seasonal Limits on Nonessential Outdoor Water Use are implemented when the mean daily streamflow falls below the designated trigger. The mean daily flow is not calculated until after midnight each day when the USGS computes the hourly data into a mean daily streamflow. As a result, permittees must use the mean daily streamflow from the preceding day when tracking streamflows.

Mean daily streamflow gage readings are available at the USGS NWIS Web Interface at <http://waterdata.usgs.gov/ma/nwis/current/?type=flow>.

- Scroll down to 01105730 – Indian Head River at Hanover, MA.
- Click on the gage number.
- Scroll down to “Provisional Date Subject to Revision – Available data for this site” and click on the drop down menu.
- Click on “Time-series: Daily data” and hit GO.
- Scroll down to the “Available Parameters” box. Within the box, be sure “Discharge (mean)” is checked, then, under “Output Format” click “Table” and hit GO.
- Scroll down to “Daily Mean Discharge, cubic feet per second” table and find the current date on the table.
- Compare the cubic feet per second (cfs) measurement shown on the table to the cfs shown under Streamflow Triggered Restrictions above.

Nonessential outdoor water uses that are subject to mandatory restrictions include:

- irrigation of lawns via sprinklers or automatic irrigation systems;
- washing of vehicles, except in a commercial car wash or as necessary for operator safety; and
- washing of exterior building surfaces, parking lots, driveways or sidewalks, except as necessary to apply surface treatments such as paint, preservatives, stucco, pavement or cement.

The following uses may be allowed when mandatory restrictions are in place:

- irrigation to establish a new lawn and new plantings during the months of May and September;
- irrigation of public parks and recreational fields by means of automatic sprinklers outside the hours of 9 am to 5 pm; and

- watering of gardens, flowers and ornamental plants by means of a hand-held hose or drip irrigation system; and
- irrigation of lawns by means of a hand held hose.

Water uses NOT subject to mandatory restrictions are those required:

- for health or safety reasons;
- by regulation;
- for the production of food and fiber;
- for the maintenance of livestock; or
- to meet the core functions of a business (for example, irrigation by golf courses as necessary to maintain tees, greens, and limited fairway watering, or irrigation by plant nurseries as necessary to maintain stock).

To the extent feasible, all summer outdoor water use should take place before 9 am and after 5 pm when evaporation and evapotranspiration rates are lower.

Public Notice of Water Use Restrictions

Permittee shall notify its customers of the restrictions and the consequences of failing to adhere to the restrictions.

- For streamflow-triggered restrictions, when streamflow at the assigned USGS local stream gage falls below a streamflow trigger for three consecutive days, customers shall be notified as soon as possible, but within three days of implementing the restrictions.

Notice to customers shall include the following:

- A detailed description of the restrictions and penalties for violating the restrictions;
- The need to limit water use, especially nonessential outdoor water use, to ensure a sustainable drinking water supply and to protect natural resources and streamflow for aquatic life; and
- Ways individual homeowners can limit water use, especially nonessential outdoor water use.

Notice that restrictions have been put in place shall be filed each year with MassDEP within 14 days of the restriction's effective date. Filing shall be in writing on the Water Use Restrictions Form at <http://www.mass.gov/eea/agencies/massdep/water/watersheds/municipal-water-use-restrictions.html>.

Notice to customers and MassDEP need not be provided if Permittee has already implemented water use restrictions that conform to the applicable restrictions and those restrictions are still in force.

Permittee shall document compliance with the summer limits on nonessential outdoor water use in its ASR.

Nothing in this permit shall prevent Permittee from implementing water use restrictions that are more restrictive than those set forth in this permit.

10. Water Conservation Requirements

At a minimum, Cohasset shall implement conservation measures listed in Table 6. The Department recognizes that Cohasset is currently implementing a number of these requirements. Compliance with the water conservation requirements shall be reported to the Department upon request unless otherwise noted below.

Table 6: Minimum Water Conservation Requirements
Leak Detection
1. At a minimum, conduct a full leak detection survey every three years. See also Special Condition 8.
2. Conduct leak detection of the entire distribution system within one year whenever the percentage of UAW increases by 5% or more (for example an increase from 3% to 8%) over the percentage reported on the ASR for the prior calendar year. Within 60 days of completing the leak detection survey, submit to the Department a report detailing the survey, any leaks uncovered as a result of the survey or otherwise, dates of repair and the estimated water savings as a result of the repairs.
3. Conduct field surveys for leaks and repair programs in accordance with the <u>AWWA Manual 36</u> .
4. Cohasset shall have repair reports available for inspection by the Department. Cohasset shall establish a schedule for repairing leaks that is at least as stringent as the following: <ul style="list-style-type: none"> ○ Leaks of 3 gallons per minute or more shall be repaired within 3 months of detection. ○ Leaks of less than 3 gallons per minute at hydrants and appurtenances shall be repaired as soon as possible. ○ Leaks of less than 3 gallons per minute shall be repaired in a timely manner, but in no event more than 6 months from detection, except that leaks in freeway, arterial or collector roadways shall be repaired when other roadwork is being performed on the roadway. <p>Leaks shall be repaired in accordance with Cohasset’s priority schedule including leaks up to the property line, curb stop or service meter, as applicable. Cohasset shall have water use regulations in place that require property owners to expeditiously repair leaks on their property.</p>
Metering
1. Calibrate all source and finished water meters at least annually and report date of calibration on the ASR.
2. Cohasset reports its system is 100% metered. All water distribution system users shall have properly sized service lines and meters that meet AWWA calibration and accuracy performance standards as set forth in <u>AWWA Manual M6 – Water Meters</u> .
3. Cohasset shall have an ongoing program to inspect individual service meters to ensure that all service meters accurately measure the volume of water used by your customers. The metering program shall include regular meter maintenance, including testing, calibration, repair, replacement and checks for tampering to identify and correct illegal connections. The plan shall continue to include placement of sufficient funds in the annual budget to calibrate, repair, or replace meters as necessary.
Pricing
1. Cohasset shall maintain a water pricing structure that includes the full cost of operating the water supply system. Cohasset shall evaluate rates at a minimum every three to five years and adjust costs as needed. Full cost pricing factors all costs - operations, maintenance, capital, and indirect costs (environmental impacts, watershed protection) - into prices.
2. Cohasset shall not use decreasing block rates. Decreasing block rates which charge lower prices as water use increases during the billing period, are not allowed by M.G.L. Chapter 40 Section 39L.
Residential and Public Sector Conservation
1. Cohasset shall meet the standards set forth in the Federal Energy Policy Act, 1992 and the Massachusetts Plumbing Code.
2. Cohasset shall meter or estimate water used by contractors using fire hydrants for pipe flushing and construction.
3. Cohasset must retrofit all municipally owned public buildings within the service area with water saving devices by August 31, 2016. Cohasset shall continue to ensure that water savings devices are installed in all municipal buildings as they are renovated, and shall ensure water conserving fixtures and landscaping practices are incorporating into the design of new municipal capital projects.

Table 6: Minimum Water Conservation Requirements
Industrial and Commercial Water Conservation
1. Cohasset shall ensure water conservation practices in all development proposals, particularly low flow devices and water-wise landscaping practices.
Public Education and Outreach
1. Cohasset shall continue to implement its water conservation and education efforts designed to educate the Town's water customers on ways to conserve water. Without limitation, Cohasset's plan may include the following actions: <ul style="list-style-type: none"> ○ Include in bill stuffers and/or bills, a work sheet to enable customers to track water use and conservation efforts and estimate the dollar savings; ○ Public space advertising/media stories on successes (and failures); ○ Conservation information centers perhaps run jointly with electric or gas company; ○ Speakers for community organizations; ○ Public service announcements; radio/T.V./audio-visual presentations; ○ Joint advertising with hardware stores to promote conservation devices; ○ Use of civic and professional organization resources; ○ Special events such as Conservation Fairs; ○ Develop materials that are targeted to schools with media that appeals to children, including materials on water resource projects and field trips; and ○ Provide multilingual materials as needed.
2. Upon request of the Department, the Town of Cohasset shall report on its public education and outreach effort, including a summary of activities developed for specific target audiences, any events or activities sponsored to promote water conservation and copies of written materials.

11. Mitigation of Impacts for Withdrawals that Exceed Baseline

Cohasset's baseline withdrawal rate is 0.79 mgd, based on the 2003-2005 actual use plus 5%. This renewed permit authorizes Cohasset to withdraw up to 0.95 mgd, and therefore the mitigation amount is 0.16 mgd, the existing authorized rate minus baseline. Cohasset's "Aaron River Reservoir Dam and Bound Brook Control Structure Flow Releases and Operational Plan" provides sufficient mitigation. Cohasset shall mitigate the impacts of its withdrawals above baseline by:

- Continuing to implement the March 2004 "Aaron River Reservoir Dam and Bound Brook Control Structure Flow Releases and Operational Plan" with reduced requirements as outlined in Special Condition 6.
- Submitting a detailed annual report of actions taken during the previous year.

12. Requirement to Report Raw and Finished Water Volumes

Cohasset shall report on its ASR the raw and finished water volumes for each water withdrawal point and for the entire water system.

GENERAL CONDITIONS (applicable to all permittees)

1. **Duty to Comply** The permittee shall comply at all times with the terms and conditions of this permit, the Act and all applicable State and Federal statutes and regulations.
2. **Operation and Maintenance** The permittee shall at all times properly operate and maintain all facilities and equipment installed or used to withdraw up to the authorized volume so as not to impair the purposes and interests of the Act.
3. **Entry and Inspections** The permittee or the permittee's agent shall allow personnel or authorized agents or employees of the Department to enter and examine any property for the purpose of determining

compliance with this permit, the Act or the regulations published pursuant thereto, upon presentation of proper identification and an oral statement of purpose.

4. **Water Emergency** Withdrawal volumes authorized by this permit are subject to restriction in any water emergency declared by the Department pursuant to MGL c 21G ss 15-17, MGL c 150 ss 111, or any other enabling authority.
5. **Transfer of Permits** This permit shall not be transferred in whole or in part unless and until the Department approves such transfer in writing, pursuant to a transfer application on forms provided by the Department requesting such approval and received by the Department at least thirty (30) days before the effective date of the proposed transfer. No transfer application shall be deemed filed unless it is accompanied by the applicable transfer fee established by 310 CMR 36.33.
6. **Duty to Report** **Duty to Report The Permittee** shall submit annually a certified statement of withdrawal, as specified on a form provided by the Department. The form must be received by the date specified by the Department.
7. **Duty to Maintain Records** The permittee shall be responsible for maintaining withdrawal records in sufficient detail to assess compliance with the conditions of this permit.
8. **Metering** Withdrawal points shall be metered. Meters shall be calibrated annually. Meters shall be maintained and replaced as necessary to ensure the accuracy of the withdrawal records.
9. **Right to Amend, Suspend or Terminate** The Department may amend, suspend or terminate the permit in accordance with M.G.L. c. 21G and 310 CMR 36.29.

APPEAL RIGHTS AND TIME LIMITS

This permit is a decision of the Department. Any person aggrieved by this decision may request an adjudicatory hearing as described herein and in accordance with the procedures described at 310 CMR 36.37. Any such request must be made in writing, by certified mail or hand delivered and received by the Department within twenty-one (21) days of the date of receipt of this permit. The hearing request, including proof of payment of the filing fee, must be mailed to:

Case Administrator
MassDEP Office of Appeals and Dispute Resolution
One Winter Street
Boston, MA 02108

No request for an appeal of this permit shall be validly filed unless a copy of the request is sent by certified mail, or delivered by hand to the local water resources management official in the community in which the withdrawal point is located; and for any person appealing this decision, who is not the applicant, unless such person notifies the permit applicant of the appeal in writing by certified mail or by hand within five (5) days of mailing the appeal to the Department.

CONTENTS OF HEARING REQUEST

310 CMR 1.01(6)(b) requires the request to include a clear and concise statement of the facts which are the grounds for the request and the relief sought. In addition, the request must include a statement of the reasons why the decision of the Department is not consistent with applicable rules and regulations, and for any person appealing this decision who is not the applicant, a clear and concise statement of how that person is aggrieved by the issuance of this permit.

FILING FEE AND ADDRESS

The Department's fee transmittal form, together with a valid check, payable to the Commonwealth of Massachusetts in the amount of \$100 must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

The request shall be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below.

EXEMPTIONS

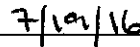
The filing fee is not required if the appellant is a city or town (or municipal agency), county, district of the Commonwealth of Massachusetts, or a municipal housing authority.

WAIVER

The Department may waive the adjudicatory hearing filing fee for any person who demonstrates to the satisfaction of the Department that the fee will create an undue financial hardship. A person, seeking a waiver must file, together with the hearing request, an affidavit setting forth the facts which support the claim of undue hardship.



Rebecca Weidman, Director
Division of Watershed Management
Bureau of Water Resources



Date

Appendix A – Functional Equivalence with the 65 Residential Gallons Per Capita Day Performance Standard

MassDEP will consider PWS permittees who cannot meet the 65 RGPCD performance standard to be functionally equivalent, and in compliance with their permit, if they have an on-going program in place that ensures “best practices” for controlling residential water use as described below.

If the permittee fails to document compliance with the RGPCD performance standard in its 2018 Annual Statistical Report (ASR), or in any ASR thereafter, then the permittee must file with that ASR a Residential Gallons Per Capita Day Compliance Plan (RGPCD Plan) which shall include, at a minimum:

1. A description of the actions taken during the prior calendar year to meet the performance standard;
2. An analysis of the cause of the failure to meet the performance standard;
3. A description of the actions that will be taken to meet the performance standard which must include, at a minimum, at least one of the following:
 - a) a program that provides water saving devices such as faucet aerators and low flow shower heads at cost;
 - b) a program that provides rebates or other incentives for the purchase of low water use appliances (washing machines, dishwashers, and toilets), or
 - c) the adoption and enforcement of an ordinance, by-law or regulation to require the installation of moisture sensors or similar climate related control technology on all automatic irrigation systems; and may include, without limitation, the following:
 - d) the use of an increasing block water rate or a seasonal water rate structure as a tool to encourage water conservation;
 - e) a program that provides rebates or other incentives for the installation of moisture sensors or similar climate related control technology on automatic irrigation systems;
 - f) the adoption and enforcement of an ordinance, by-law or regulation to require that all new construction include water saving devices and low water use appliances;
 - g) the adoption and enforcement of an ordinance, by-law or regulation to require that all new construction minimize lawn area and/or irrigated lawn area, maximize the use of drought resistant landscaping, and maximize the use of top soil with a high water retention rate;
 - h) the implementation of a program to encourage the use of cisterns or rain barrels for outside watering;
 - i) the implementation of monthly or quarterly billing.
4. A schedule for implementation; and
5. An analysis of how the planned actions will address the specific circumstances that resulted in the failure to meet the performance standard.

If the permittee is already implementing one or more of these programs, it must include in its RGPCD plan the continued implementation of such program(s), as well as implementation of at least one additional program. All programs must include a public information component designed to inform customers of the program and to encourage participation in the program.

RGPCD plans may be amended to revise the actions that will be taken to meet the performance standard. Amended RGPCD plans must include the information set forth above.

If a RGPCD plan is required, the permittee must:

1. submit information and supporting documentation sufficient to demonstrate compliance with its RGPCD plan annually at the time it files its ASR, and
2. continue to implement the RGPCD plan until it complies with the performance standard and such compliance is documented in the permittee’s ASR for the calendar year in which the standard is met.

Appendix B – Functional Equivalence with the 10% Unaccounted for Water Performance Standard

MassDEP will consider PWS permittees who cannot meet the 10% UAW performance standard to be functionally equivalent, and in compliance with their permit, if they have an on-going program in place that ensures “best practices” for controlling water loss. The water loss control program will be based on annual water audits and guidance as described in the *AWWA/IWA Manual of Water Supply Practices – M36, Water Audits and Loss Control Programs* (AWWA M36).

If, as of December 31, 2019, the permittee fails to document compliance with the Unaccounted for Water performance standard (UAW of 10% or less for 2 of the 3 most recent years throughout the permit period), then the permittee shall develop and implement a water loss control program following the *AWWA M36 Water Audits and Loss Control Programs* within 5 full calendar years.

1. Conduct an annual “top down” water audit, calculate the data validity level/score using AWWA Water Loss Control Committee’s Free Water Audit Software, and submit the AWWA WLCC Free Water Audit Software: Reporting Worksheet and data validity score annually with its Annual Statistical Report (ASR).
 - If a PWS’s data validity level/score is less than Level III (51-70), steps recommended through the audit(s) shall be taken to improve the reliability of the data prior to developing a long-term program to reduce real and apparent water losses.
 - Data with a validity score of 50 or less are considered too weak to be used to develop a component analysis or for infrastructure planning and maintenance.
 - Developing data with an acceptably strong validity score can be a multi-year process.
2. When the data validity score meets the Level III (51-70) requirement, the permittee shall conduct a component analysis to identify causes of real and apparent water loss and develop a program to control losses based on the results of the component analysis. The Permittee shall submit the component analysis and water loss control program with a proposed implementation schedule to the Department.
3. Continued implementation will be a condition of the permit in place of meeting the 10% UAW performance standard.
4. Upon request of the Department, the permittee shall report on its implementation of the water loss control program.

A PWS permittee may choose to discontinue the water loss program implementation if UAW, as reported on the ASR and approved by DEP, is below 10% for four consecutive years, and the water audit data validity scores are at least Level III (51-70) for the same four years.

NOTE FOR SMALL SYSTEMS: For small systems with less than 3,000 service connections or a service connection density of less than 16 connections per mile of pipeline, the Unavoidable Annual Real Loss (UARL) calculation and the Infrastructure Leak Index (ILI) developed as the final steps of the top down water audit may not result in valid performance indicators, and may not be comparable to the UARL and ILI calculations for larger systems.

However, these small systems can benefit from developing reliable data and conducting an annual top down water audit. Small systems can rely on the real losses (gallons per mile of main per day) performance indicator developed in the water audit as a measure of real water loss when developing a water loss control program. The M36 Manual discusses the audit process for small systems, and includes a chapter to guide small systems in understanding the results of their audits and in developing a water loss control program (*Manual of Water Supply Practices – M36, Fourth Edition, Chapter 9: Considerations for Small Systems*, pp. 293-305).

MassDEP UAW Water Loss Control Measures: Permittees who do not have MassDEP approved Water Loss Control Programs in place by 6th calendar year after 2019 will be required to implement the MassDEP UAW Water Loss Control Measures outlined below:

- An annual water audit and leak detection survey, as described in the AWWA M36 Manual, of the entire system.
 - Within one year, repair 75% (by water volume) of all leaks detected in the survey that are under the control of the public water system;
 - Thereafter, repair leaks as necessary to reduce permittee's UAW to 10% or the minimum level possible.
- Meter inspection and, as appropriate, repair, replace and calibrate water meters:
 - Large Meters (2" or greater) – within one year
 - Medium Meters (1" or greater and less than 2") – within 2 years
 - Small Meters (less than 1") - within three years
 - Thereafter, calibrate and or replace all meters according to type and specification.
- Bill at least quarterly within three years.
- Water pricing structure sufficient to pay the full cost of operating the system.

Hardship - A permittee may present an analysis of the cost effectiveness of implementing certain conservation measures included in the MassDEP UAW Water Loss Control Measures and offer alternative measures. Any analysis must explicitly consider environmental impacts and must produce equal or greater environmental benefits. Suppliers will be able to present:

- Reasons why specific measures are not cost effective because the cost would exceed the costs of alternative methods of achieving the appropriate standard;
- Alternative specific conservation measures that would result in equal or greater system-wide water savings or equal or greater environmental benefits than the conservation measures included in the MassDEP UAW Functional Equivalence Plan; and
- When applicable, an analysis demonstrating that implementation of specific measures will cause or exacerbate significant economic hardship.

Appendix C – Cohasset Drought Phase Levels

Phase	Precipitation	Stream Flow	Reservoir	CWD Drought Phase Actions
Normal	Two cumulative months above 75% of normal for Cohasset WTP readings	Minimum Seasonal Target Flow Releases Maintained	Reservoirs in the area at or above normal range	<p>CWD Drought Phase Actions</p> <ol style="list-style-type: none"> 1. Collect and reviews drought condition data. 2. Monitor and record Lily Pond and Aaron River Reservoir water surface levels weekly. 3. Maintain ordinances related to water use demands. 4. Review rate structure on an annual basis with respect to seasonal and outdoor water use. 5. Maintain standard operating procedures.
Advisory	Two cumulative months below 65% of normal for Cohasset WTP readings	Minimum Seasonal Target Flow Releases not consistently Maintained	Less than 365 days of storage in the Aaron River Reservoir and Lily Pond System at current annual ADF use	<ol style="list-style-type: none"> 1. Develop press announcements and communicates with public and town departments about dry conditions. 2. Recommend voluntary conservation measures and request prudent use of water by all customers (such as limit outdoor watering on an odd-even day basis) and begins public awareness campaign on water conservation. 3. Offer assistance to enhance efficiency of major users.
Watch	<p>If one of the following applies:</p> <ul style="list-style-type: none"> • 3 cumulative months less than 65% normal • 6 cumulative months less than 70% normal • 12 cumulative months less than 70% normal for Cohasset WTP readings 	Seasonal Minimum release for Bound Brook not achieved for Seven (7) consecutive days	Less than 330 days of storage in the Aaron River Reservoir and Lily Pond System at current annual ADF use <i>(See Drought Management Plan Appendix B for Cohasset's Storage Capacity)</i>	<ol style="list-style-type: none"> 1. Recommends and encourage continued water conservation and restrictions. 2. Enact outdoor water use restrictions (such as hand held watering only; discontinue use of all other types of outdoor watering systems). 3. Offer assistance to town departments on managing water use during dry conditions. 4. Implement reduction of releases from the Lily Pond and Aaron River Reservoir. 5. Increase public information regarding current conditions and water conservation measures. 6. Advise the Fire Department of dry conditions and review impact of potential low supply sources.
Warning	<p>If one of the following applies;</p> <ul style="list-style-type: none"> • 3 cumulative months less than 40% normal • 6 cumulative months less than 55% normal • 12 cumulative months less than 65% normal for Cohasset WTP readings 	Seasonal Minimum release for Bound Brook not achieved for 21 consecutive days	Less than 300 days of storage in the Aaron River Reservoir and Lily Pond System at current annual ADF use	<ol style="list-style-type: none"> 1. Intensify media coverage and public education efforts. 2. Enact total outdoor water use restriction. 3. Assess fines for violation of water use restrictions. 4. Discontinue releases from the Lily Pond and Aaron River Reservoir. 5. Recommends that water users cease all non-essential water uses. 6. Review readiness and availability of emergency interconnections and sources of water. 7. Review dry conditions with the BOH and assess public health threats and acts as needed.
Emergency	Same criteria as Warning and previous 2 months was Warning or Emergency	Seasonal Minimum release for Bound Brook not achieved for 45 consecutive days	Less than 250 days of storage in the Aaron River Reservoir and Lily Pond System at current ADF use	<ol style="list-style-type: none"> 1. Declare an emergency drought phase. 2. Require mandatory bans on all non-essential water use. 3. Seek assistance from MEMA.